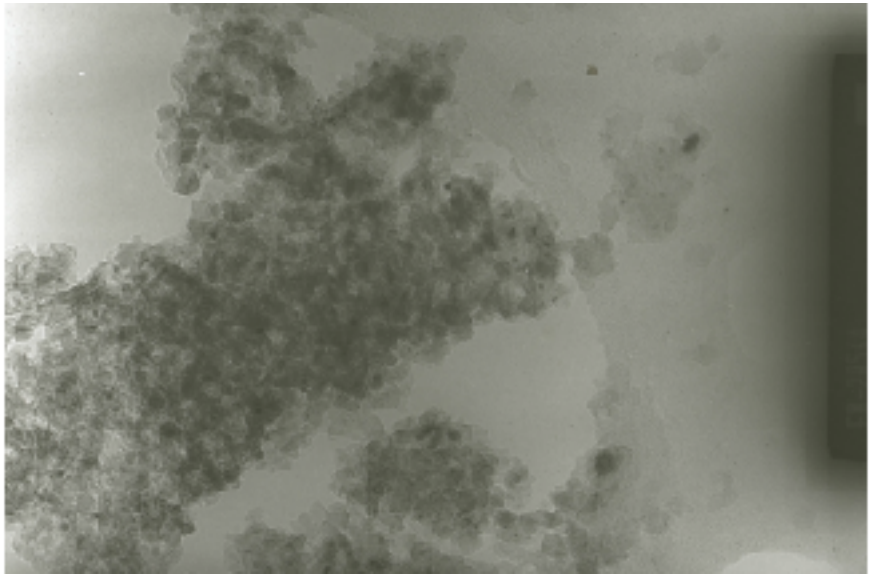
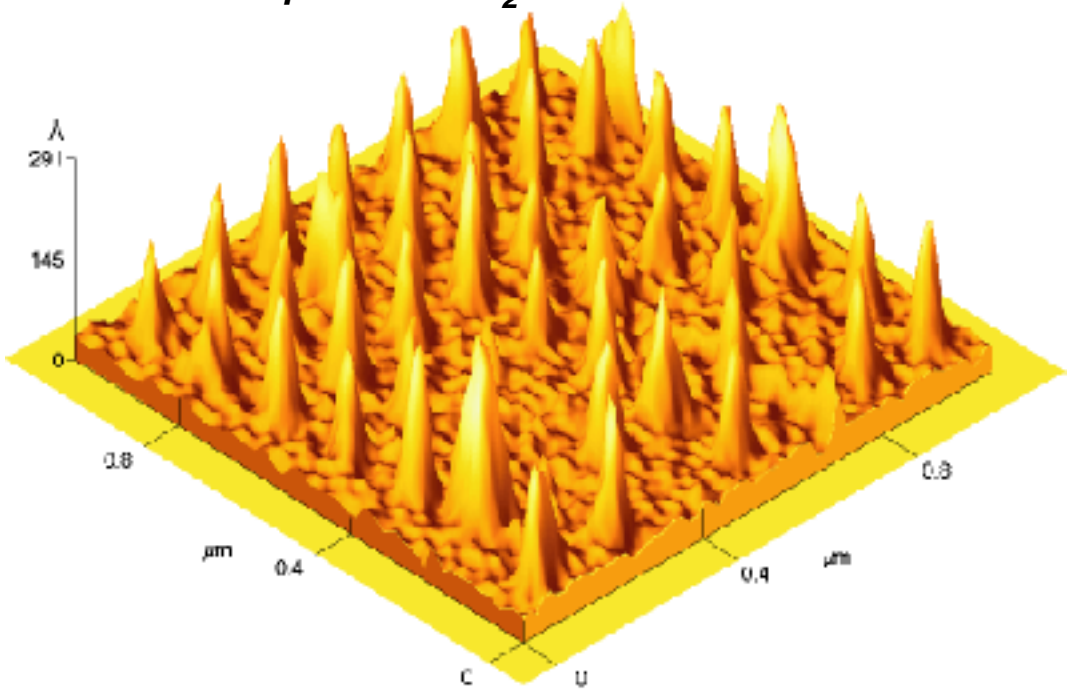
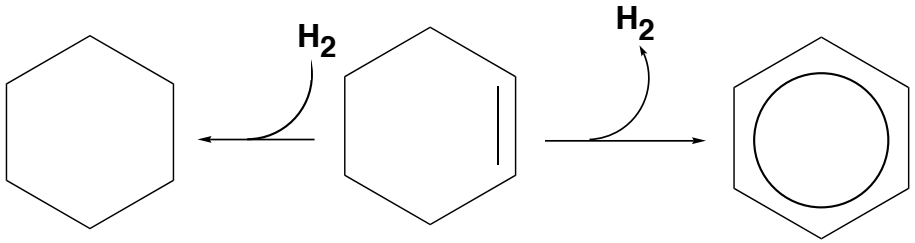
Selective, Active Catalytic Nanoparticle Arrays Fabricated

TEM of supported Pt industrial catalyst



AFM image of 20 nm Pt nanoparticles 100 nm apart on SiO_2 substrate.





Catalytic reaction of cyclohexene (center) can lead to cyclohexane (left) via hydrogenation or benzene (right) via dehydrogenation. Selectivity depends critically on the nanometer-scale features of the catalyst active site. The complexity of the industrial catalyst (above left) prevents precise determination of the nature of the active site. Nanofabrication allows control of metal particle size and spacing, thus enabling quantitative study of their effect on selectivity.

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